produced at the surface. In his remarks on the great storm (at Nassau, October 1866), Captain Chatfield observed, "that (during the calm) while the vortex of the storm was passing over the harbour, the atmosphere was most oppressive, and the clouds in the zenith appeared to be revolving rapidly." Under certain modifying circumstances, the same *vera causa* will, I believe, account satisfactorily for the phenomena of "hail-storms," "water-spouts," &c. But I am unwilling to trespass too much on your space.

Glenville, Fermoy HENRY HUDSON, M.D.

### A Cyclone in England.

IT is so seldom we get a cyclone so well developed in these latitudes; that I have thought the following observations would interest the readers of NATURE.

| | | | | | | |
|---|---|---|---|---|---|---|
| Noon. | Barometer, | 29.678. | Wind, | S.S.W. | Estimated force, | 4 |
| 4 P.M. | ,, | 29.304. | ,, | S.W. | ,, | 9 |
| 6 P.M. | ,, | 29.205. | ,, | W. | ,, | 10 |
| 9.40 P.M. | ,, | 29.342. | ,, | W.N.W. | ,, | 9 |
| 11 P.M. | ,, | 29.391. | ,, | N.W. | ,, | 7 |

It will be observed the wind began to freshen from the S.S.W. with a falling barometer; it then veered to S.W., W.S.W. to W., the barometer falling the whole time. When the wind arrived at W. the storm was at its height and the barometer a minimum. The wind then veered W. by N., W.N.W. to N.W., gradually becoming less violent, and the barometer rose during that time. The storm lasted about twelve or fourteen hours.

From the above, I deduce that Plymouth must have been in the southern half of the cyclone which travelled eastward; hence, probably, more damage must have been done further north than here.

I should feel obliged by any reader of NATURE living in the North or East of England, giving the results of his observations during the storm. F.R.A.S.

Plymouth, 17th December, 1869.

### Lectures to Ladies

I HAVE only just seen the letter in NATURE, signed "M.A.B.," on the subject of the hour chosen for lectures to ladies. I most sincerely hope that the morning hour will be continued. It is certainly to be regretted if this arrangement is inconvenient to ladies engaged in teaching; but to the far larger number who are not so engaged, any other hour would be prohibitory.

In addition to the constant inconvenience entailed on ladies by the necessity (or supposed necessity) of their being "fetched and carried" every time they go out after dark, all ladies living ordinary lives in quiet homes, know very well that it behoves them to get their "occupations" done in the day-time, and that if they began attending courses of lectures in the evening, their fathers, husbands, and brothers would be apt to raise a pretty forcible outcry against the advance of female education.

If I might venture to make a suggestion, it would be that South Kensington is a very long way from everywhere else, and that a more central situation would add very much to the convenience of those who come from a distance. I am sure that no one who attended Professor Huxley's course of lectures just concluded, begrudged the time and trouble it cost them to get there, or thought it anything but well bestowed; at the same time a shorter and more manageable expedition would be a great boon to many. M. T. G.

## NOTES

THE Gold Medal of the Royal Astronomical Society has, we are informed, been this year awarded to M. Delaunay, one of the greatest of living mathematicians and astronomers, for his many important investigations. We are sure that English astronomers will hail this award with the liveliest satisfaction.

THE question of Meteorological Standards is, we learn, now occupying the attention of the Royal Society Council. We may hope, therefore, that the revision which has so long been needed will now take place.

THE Lecturers named for the Friday Evening Meetings at the Royal Institution, before Easter, are Prof. Tyndall, F.R.S., Prof. Odling, F.R.S., Prof. Ruskin, Dr. W. B. Carpenter, F.R.S., Mr. W. K. Clifford, Colonel Sir Henry James, F.R.S., Mr. E. J. Reed, C.B., Chief Constructor of the Navy, Prof. Sylvester, F.R.S., Mr. P. W. Barlow, F.R.S, Prof. Rolleston, F.R.S., Prof. Roscoe, F.R.S., and Prof. Huxley, F.R.S. Prof. Tyndall's discourse will be on "Haze and Dust," and will probably be delivered on the 21st of January. Dr. Odling proposes to lecture on "Prof. Graham's Scientific Work;" Dr. Carpenter on "Temperature and Life in the Deep Sea," and Prof. Sylvester on "Chance."

THE Keith Prize of the Royal Society of Edinburgh was awarded on Monday to Professor Tait, for his paper on the rotation of a rigid body about a fixed point.

THE Professorship of Botany in the Royal College of Science, Dublin, is now vacant, Professor Wyville Thomson's resignation having been accepted by the Science and Art Department.

THE following lectures will be given in the course of the present session of the Chemical Society:—On Vanadium, by Dr. Roscoe; on Refraction Equivalents, by Dr. Gladstone; and on the Platinic Ammoniums, by Dr. Odling.

THE subscriptions to the Faraday Monument Fund, received up to Dec. 7, amount to £1,400. The object of the fund is to provide a public memorial to Faraday, and the subscription from one person is not to exceed five guineas.

PROFESSOR CARL VOGT, of Vienna, is actively engaged in the formation of an Anthropological Society for Austria.

DR. S. COULL MACKENZIE has been appointed to the professorship of Hygiene in the Calcutta Medical College.

IN a new quarterly journal devoted to public hygiene, and produced at Brunswick, in Germany, we find a carefully-written article upon English institutions for hygiene, and English factories. There are also contributions upon army hygiene, barrack reform, and drainage. The journal is edited by Prof. Riclam, of Leipzig.

THE Argenteuil Prize has been awarded by the Academy of Medicine of Paris in the following way:—To Mr. Corradi, of Florence, 5,000 francs; to MM. Mallez and Tripier, 2,000 francs; to M. Reliquet, 1,000 francs.

THE General Secretary of the Academy of Vienna has published as a *tirage apart* from the almanack of the Academy, a biographical sketch of Karl Ludwig Freiherr von Reichenbach, who, after a long and distinguished scientific career, died in January last at the advanced age of eighty-one. Dr. Schrotter divides the period of Reichenbach's scientific activity into three parts: the first, that of practical work and exact research, during which he enriched mankind by the discovery of paraffin and creosote; the second, that which he devoted to the study of meteorites, a study in which his enthusiastic mind led him beyond the boundary of accurate science; and, lastly, the time when he gave himself up to the investigation of so-called animal magnetism and the imaginary odic force by which he sought to explain the phenomena he thought he had discovered. Dr. Schrötter rightly concludes, that however far astray Reichenbach may have been led by his odic notions, he earned for himself an honourable place in science, his very errors being those of a highly-gifted man.

WE have received the first part of the volume recording the scientific results of the travels of Baron Claus von der Decken in East Africa, during the years 1857–1865. The materials have been worked up by Peters, Cabanis, Hilgendorf, Ed. von Martens, and Semper, and comprise Mammalia, Birds, Amphibia, Crustacea, Mollusca, and Echinodermata. The part before us is illustrated by thirty-five lithographic plates of great beauty, most of them being carefully and delicately coloured. The second part, which is to contain the Insects and Spiders, has been entrusted to Gerstäcker.

DR. OLDHAM, the president, has communicated to the Proceedings of the Asiatic Society of Bengal some interesting notes on remains found in a Cromlech at Coorg. This Cromlech was opened out by the order of the Chief Commissioner of Mysore, on the Moory Betta Hill, in North Coorg. The relics consist of small earthenware vessels, as well as several beads and tubes bored through, and evidently portions of necklaces. These last are of the colour of agate, and have circles in white around them, with zigzag pattern in white in the centre.

IN the early part of last year Dr. Francis Day, F.L.S., F.Z.S., was commissioned to examine the important subject of the Indian River Fisheries. The result is the publication of an interesting and comprehensive report. Dr. Day's observations were at first directed to the fresh-water fisheries south of Madras. He personally inspected the Coleroon anicuts, and then extended his researches to the places lying between these anicuts and the sea. Dr. Day commenced his examinations with the Cauvery river, which runs a course of a hundred miles in the Tanjore district, where it gives off four large branches. At the island of Serungum, the Coleroon becomes the main channel. At this point an anicut was erected in order to raise the water to a height of six feet by means of a wall or barrier, to which the native name of anicutta or anicut was applied. It was subsequently found necessary to erect a regulating dam upon the head of the Cauvery. This dam consisted of a flooring across the stream, with a slip at each extremity 76 feet long, 2·4 feet above the low or middle portion. On the northern waterway of this anicut there are sluices with vents 8 feet in width. It is stated that when, during the freshets, the fish cannot surmount the dam, they make their way up the river through these vents. During the last few years the decrease of fish in the Coleroon is said to be considerable, though Dr. Day does not entirely endorse this assertion. The most valuable fish in the Coleroon was formerly the oolum, or sable fish, culpea (alausa), palasah, C. and V.; but since the erection of the anicut they have seldom been found. It is asserted that in 1836 the value of the sable fish captured in the river near Trindinopoly was equal annually to about two lacs (£200,000). They were principally taken for their roe; but when in condition they are described as splendid eating. Unless something is done, this fine fish, and others of value, will become extinct in the Coleroon. Dr. Day points out how necessary it is that some means may be tried to enable the fish to ascend the river above the anicut, that the ova may be deposited in sufficiently deep water.

ACCORDING to the *Boston Advertiser*, an upheaval is taking place in the harbour at Machias port, Maine. Vast quantities of water, mud, and stones are being thrown up to the distance of many feet with a loud rushing noise. During last summer this occurrence was frequently noticed.

A GERMAN translation of Mr. Wallace's work on the Malay Archipelago, by Dr. Adolf Bernard Meyer, has just been published by Westermann of Brunswick.

Mr. M. J. Barrington Ward, B.A., F.L.S., Scholar of Magdalen Hall, Oxford, has been appointed Natural History Master at Clifton College.

WE have to record the appearance of the sixth, seventh, and eighth supplementary volumes of the Annals of the Munich Observatory. The first contains the meteorological observations from 1857 to 1866; the second a similar series taken on the Hohenfreissenberg from 1851 to 1864; and the last, a catalogue of 6,323 telescopic stars between + 3° and + 9° declination which occur in the Munich zone observations, reduced to the commencement of the year 1850, together with comparison of the observations of Lalande, Bessel, Rünker, and Schiellerur.

THE second part of the results of the Geological Survey of the West Indies has just been issued under the title "Reports on the Geology of Jamaica." Pending a complete notice of this important volume, we may mention that it contains in its first thirty-seven pages a general description of the physical geography of the island, with outlines of the different formations. The body of the book consists of the details of the lithological structure of the various districts. Appended to the volume is a report by Mr. Etheridge, Palæologist of the British Survey, on the organic remains. He has not only examined and classified these remains, but has also referred them to their equivalents in the cretaceous and tertiary deposits of Europe. Sir Roderick Murchison, in his preface, calls special attention to the interesting results of Mr. Etheridge's work.

THE Royal Irish Academy have voted the following sums of money out of their special parliamentary grant for scientific purposes:—30*l.* to the Rev. Eugene O'Meara, A.M., to enable him to continue his researches on the Irish Diatomaceæ; 30*l.* to H. Hennessy, F.R.S., to determine the molecular condition of fluids and their motion, when in rotation and in contact with solids; 20*l.* to J. Bailey, to carry out experiments on "Flitch Beams;" 20*l.* to B. B. Stoney, to try experiments on riveted joints. All the reports on these subjects will appear from time to time in the "Transactions and Proceedings of the Academy."

A SERIES of very beautiful photographic negatives has been taken of all the more important antiquities in the Museum of the Royal Irish Academy. The Council of the Academy intend to have these printed from, and the prints to be sold both separately and in series.

WE hope shortly to give an article on a new artificial light suitable for the production of photographic enlargements, by Dr. Van Monckhoven.

THE following is the result of the National Sciences Tripos, at Cambridge, in which the examiners were—J. Hooker, LL.D., W. H. Miller, M.A., O. Fisher, M.A., C. Trotter, M.A., and J. B. Bradbury, M.D. Class I. Ds. Watson, Queen's.—Class II. Ds. Kilner, St. John's; Maxwell, King's; Lupton, Trinity; Lees, Trinity; Stirling, Trinity; Simpson, Caius; Calliphronas, Caius.—Class III. Ds. Alliot, Pembroke; Johnson, Jesus; Banham, St. John's; and Colvin, Trinity—equal; Young, Caius. A prize offered by the Professor of Botany has been adjudged to M. J. Barrington-Ward, B.A., Scholar of Magdalen Hall.

WE have received the following note with regard to the Holborn Viaduct:—"The Report of the Engineers, published in the daily papers, entirely endorses the opinion expressed in the note I previously sent you. The only difference between it and my explanation arises from the fact of the insertion in the joints of lead-packing near the outer edge of the stone, which of course exaggerates the evil of a 'concave face.' The variation of temperature which has been dwelt upon as the chief cause of failure is evidently in the opinion of the engineers quite inadequate to account for it."

MR. MELDRUM has kindly forwarded us the following note:—"A strict watch was kept at the Mauritius for meteors during the nights of the 12th, 13th, and 14th November, and the expected shower was seen on the morning of the 14th. Between midnight of the 13th, and 4·40 a.m. of the 14th, 439 meteors were counted at the Observatory, Port Louis, by three observers. Of that number, 427 were seen between 3·20 and 4·40 a.m. Sir Henry Barkly, at his country residence, 7 miles from Port Louis, counted 192 between 3·15 and 4·15 a.m. At my residence, 5 miles from Port Louis, 434 were counted between midnight and 4·40 a.m., by two observers up to 4 a.m., and then by four observers. Between 3·14 and 4·24 we counted 370, and between 3·55 and 4·13, 215. The greatest number seen by Sir Henry Barkly in an interval of five minutes was 33 between 3·55 and 4·0, but he saw only a small portion of the heavens. I have not had time to analyse the observations carefully, but the time of maximum intensity was about 4·09 a.m. The only source of doubt in this subject arises from the circumstance that after 4·15 daylight was setting in. I have no doubt that the radiant point was somewhere within the sickle of Leo, but I am not sure as to its exact position. Most of the meteors shot westward along the ecliptic, through Gemini and Taurus, but others in all directions. The trains of light and the nuclei were generally white, with a slight tinge of green, but all the prismatic colours were seen. The time of duration of the flight was from the fraction of a second up to 6 seconds, and the longest trains about 40°. At one time gleams of light of various forms appeared in Leo. I had a small hand-spectroscope, but the times of duration were too short for using it."

## *SCIENTIFIC SERIALS*

The *Moniteur Scientifique* for December 1 contains a translation of Dr. Williamson's memoir of the late Professor Graham, which appeared in the first number of NATURE, a review of contemporary physics and astronomy, a long notice of M. Paul Champion's work on the ancient and modern industry of China, and the usual accounts of new patents and meetings of scientific societies. The number for December 15 completes the volume for 1869, and gives elaborate tables of contents. The remaining space is devoted to reports of the proceedings of the Academy of Sciences, abstracts of papers, notices of new publications, and an account of the new development of the trade in false autographs.

The *Revue des Cours Scientifiques* for December 11 contains a translation of an essay by Helmholtz on Goethe as a naturalist and a physicist, an article on the boring of Mont Cenis by M. A. Cazin, and a translation of Professor Williamson's memoir of Graham, contributed to our first number. The greater portion of the number for December 18 is occupied by a translation of a paper on the Centenary of Humboldt, read before the Boston Natural History Society by Professor Agassiz. It also contains lectures on Palæontology by M. A. Gaudry, and an important paper on the Mortality of Women in Labour, by Professor Lorain.

In the *Philosophical Magazine* for this month, Mr. C. Tomlinson, F.R.S., gives an account of Van der Meusbrugghe's important treatise on the Superficial Tension of Liquids, in which the movements of camphor on the surface of water are shown to form a particular case of a general theory. Mr. W. H. Preece contributes a proof of the Parallelogram of Forces, and Dr. Odling a note on Condensed Ammonia Compounds. Professor Kengott's Microscopical Investigation of the Knyahynia Meteorite, and M. Abich's paper on Hailstorms in Russian Georgia (both of which are accompanied by plates), are well deserving of attention.

In the *Chemical News* for December 17, Mr. Edwin Smith describes an interesting series of experiments on the Electrical Phenomena of Plants, suggested by a chapter in Becquerel's treatise. A paper read before the Glasgow Philosophical Society by Mr. R. R. Tatlock, F.C.S., on the Estimation of Iodine and Bromine, with special reference to the Analysis of Kelp, is reproduced. Mr. W. T. Suffolk, F.R.M.S., continues his useful articles on Microscopical Manipulation; and Mr. H. C. Sorby, F.R.S., describes the application of the Spectrum Microscope to the Valuation of Wines. In a paper on the Constitution of the Compounds of Sodium, Mr. J. A. Wanklyn, F.C.S., adduces new arguments in support of his opinion that the metal sodium had a polyvalent character. The books noticed in this number are Dr. Bence Jones's Memoir of Faraday, and a treatise on the Leclanché Battery. Correspondence from Dr. Mennier and Dr. J. H. Gladstone, and Chemical Notices from Foreign Journals, make up the rest of the number.

A Paper by M. Felix Plateau, on the Flight of the Coleoptera, read before the Physical and Natural History Society of Geneva, in September last, has just been published in the *Bibliothèque Universelle et Revue Suisse*. The conclusions arrived at are as follows:—(1), The difference of flexibility between the two edges of the wing are not sufficient to account completely for the phenomena of flight. (2), The wing makes a wide angle with the plane in which it moves. (3), It is deflected more rapidly than it is elevated. (4), The extent of surface of the wing is greater in the movement of deflection than in the movement of elevation. The influence of the elytra, their form and mode of action, as well as some other considerations, are reserved for a memoir which the author hopes to publish shortly.

## *ASTRONOMY*

Oppolzer communicates to the *Astronomische Nachrichten* the following elements of Comet II., 1869:—

$$\tau = \text{Oct. } 9{\cdot}266 \text{ Berlin mean time.}$$

$$\left.\begin{array}{r@{\;}l} \pi &= 139^\circ\ 1'\ 13'' \\ \Omega &= 311^\circ\ 27'\ 51'' \\ \iota &= 111^\circ\ 26'\ 40'' \end{array}\right\} \text{Mean Eq. 1869-70.}$$

$$\log. q = 0{\cdot}09014^\circ$$

Professor C. H. F. Peters, of Clinton, N.Y., has discovered still another new planet, 9·7 mag., the elements of which are as follows:—

$$\begin{array}{r@{\;}l} \tau &= 1869, \text{ Oct. } 0{\cdot}0 \text{ Berlin mean time.} \\ M &= 338^\circ\ 1'\ 47{\cdot}7'' \\ \pi &= 53^\circ\ 8'\ 20{\cdot}8'' \\ \Omega &= 5^\circ\ 3'\ 52{\cdot}2'' \\ \iota &= 8^\circ\ 9'\ 59{\cdot}4'' \\ \phi &= 16^\circ\ 43'\ 30{\cdot}2'' \\ \mu &= 808''32 \\ \log. a & \ \ 0{\cdot}428281 \end{array}$$

## *SOCIETIES AND ACADEMIES*

### LONDON

**Royal Astronomical Society**, December 10.—Second Meeting of Session. Admiral Manners, president, in the chair during the early part of the meeting; afterwards (the president finding his health not sufficiently restored to enable him to remain), Mr. De la Rue, F.R.S., vice-president, took the chair. The minutes of the last meeting were read and confirmed, and thirty-two presents announced, including a magnificent representation of the solar spectrum from France (showing the part beyond the violet end), presented by Mr. Ladd. Mr. Williams, the assistant secretary, then read a series of extracts from an elaborate work on Chinese Astronomy, upon which he has been engaged during the last three years. He exhibited in a very complete and lucid manner the Chinese mode of reckoning time by cycles of sixty years, the several years of each cycle being indicated by certain characters called Kea Tsze. He then showed how any year in ordinary chronology, whether B.C. or A.D., can be represented in the proper cycle, and in its right place in that cycle. He described the division of the heavens into thirty-one parts; three, called "Yuen," of large size; the remainder, called "Suh," representing lunar houses, and very irregular in extent, both from east to west and from north to south. While one, for instance, extended north and south from Perseus to Canopus, another consisted mainly of a few stars in the head of Orion. Other extracts exhibited the correctness of the positions assigned by the Chinese to the equinoxes and the solstices, and the evidence their estimates give respecting the date at which their observations were made. He mentioned *inter alia* that the Metonic Cycle had been known to the Chinese astronomers 2,000 years before Meton's day. The occurrence of the names of our modern asterisms in Chinese records must not be held to indicate the antiquity of our constellation-figures, because it cannot be doubted that the Jesuits taught the Chinese these new names. In fact, the Chinese were led to remodel their system of astronomy according to the instructions of the Jesuits—a misfortune, perhaps, since, although the old system of astronomy had had the disadvantage of being inexact and scarcely intelligible, the change destroyed many of the clues by which we might have found clearer ideas as to what the Chinese astronomers really meant to record.—The Astronomer Royal indicated his high opinion of the value of such researches as those in which Mr. Williams had been engaged. Astronomy is the science which of all others brings most together the past, the present, and the future, and, therefore, all studies of long past eras, even though the astronomical observations then made were comparatively inexact, cannot but have a high value. Mr. Stone, F.R.S., called attention to the general value of the matter brought before the society's notice by Mr. Williams, but expressed his regret that the Chinese records named only the day on which any phenomenon was observed. Mr. De la Rue then mentioned that the greater part, if not all, of Mr. Williams's work, would be printed in the Society's Memoirs.—The Astronomer Royal described an arrangement for correcting atmospheric chromatic dispersion, even simpler than those he had before devised. It had occurred simultaneously to himself and to Mr. Simms, the